

REMARKS

This responds to the Office Action dated February 23, 2007, and the references cited therewith.

Claims 12, 17, 21, and 26 are amended herein. Claims 1-36 are now pending in this application.

§112 Rejection of the Claims

Claims 9, 18, 27, and 36 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The Office Action asserts that the rejected claims are:

“directed to a process wherein a fluid is added to the syngas and byproducts produced by the first reactor prior to introducing the syngas and byproducts into the second reactor. However, no such mention of this limitation appears in the specification or any detail of what the fluids comprises is present anywhere in the specification, including the claims.”

The rejections are respectfully traversed and reconsideration is requested. In paragraph 13 of the specification, a fluid addition step between the first and second reactors is described, and the specific example of steam as being the fluid is given. Applicant believes that the one of ordinary skill in the art, upon reading and understanding the present disclosure, could readily employ steam for the stated purpose as well as substitute other appropriate fluids. Withdrawal of the rejections is respectfully requested.

§102 Rejection of the Claims

Claims 1, 19 and 28 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,682,605 (Wada). The rejections are traversed and reconsideration is respectfully requested.

The Office Action asserts that the limitations of claims 1, 10, 19, and 28 are taught by Wada, citing Fig. 5 and the accompanying description at col. 5, line 51 to col. 6, line 20. Applicant believes that the statement in the Office Action as to what is taught by Wada is factually incorrect. It is respectfully submitted that Wada does not disclose, among other things,

producing syngas and byproducts that include soot in a first reactor and then introducing the syngas and soot thus produced into a second reactor that gasifies the soot. As best understood, the heat insulating brick 12 of Fig. 5 in Wada, which comprises upper and lower members, serves to pre-heat the gas mixture as it flows through the vertical gas perforations 11 to the catalyst-filled reactor retort 3 where the gas mixture is further heated so that the endothermic syngas-producing reactions ensue. The process described in Wada, however, purports to produce little or no soot, either in the heat insulating brick or the reactor retort (see, e.g., col. 6, lines 17-20 and col. 6, lines 40-45). It is respectfully submitted that Wada does not relate to a process in which soot is produced and subsequently gasified.

Regarding claims 2, 12, 21, and 30, the Office Action asserts that col. 6, lines 35-44 of Wada discloses a process where substantially all of the byproduct soot is gasified. As noted above, it is respectfully submitted that Wada does not disclose a process where soot is gasified.

Regarding claims 4, 13, 22, and 31, the Office Action asserts that col. 6, line 36 of Wada discloses the non-carbonaceous material being alumina. The alumina referred to in Wada, however, is the material of the insulating brick and not a material that traps soot so that it can be gasified as recited in the pending claims.

Regarding claims 5, 14, 23, and 32, the Office Action asserts that col. 6, line 36 of Wada discloses the non-carbonaceous material being in the form of spherical particles. Applicant does not understand this statement. The cited portion of Wada is referring to the heat insulating brick being partially constructed with alumina, and the insulating brick does not include any spherical particles.

Regarding claims 6, 15, 24, and 33 the Office Action asserts that Fig. 5 of Wada discloses the non-carbonaceous material being in the form of rings. The only thing that could be said to look like rings in Fig. 5 is the depiction of the catalyst layer 5. Applicant does not understand that depiction, however, to actually represent that the catalyst is in the form of rings.

In order to anticipate a claim under Section 102, a reference must disclose each and every feature recited by the claim, and the Wada reference does not disclose a process that gasifies soot. Furthermore, Applicant believes that the process described by Wada is so materially different than that claimed in the present application that no obviousness issue arises. Withdrawal of the rejections is respectfully requested.

§103 Rejection of the Claims

Claims 2, 11, 20, and 29 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Wada in view of U.S. Patent No. 6,113,874 (Kobayashi). Claims 7, 16, 25, and 34 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Wada in view of JP 05208134A (Van). Claims 8, 26, and 35 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Wada. The rejections are traversed and reconsideration is respectfully requested. As explained above, it is Applicant's position that Wada does not disclose a process that gasifies soot. For that reason alone, Applicant believes that the obviousness rejections based upon a contrary characterization of Wada as put forth in the Office Action are improper.

Regarding claims 2, 11, 20, and 29, the Office Action asserts that Kobayashi teaches a heat exchange reformer for recovering a portion of the heat from the soot depleted syngas stream and using at least a portion of the recovered heat to facilitate the additional production of syngas via the (endothermic) catalytic reforming of natural gas and steam. As described in the specification, the presently claimed apparatus and process for gasifying soot eliminates the need for special boilers that are otherwise needed for heat exchange reforming when the syngas contains soot. Kobayashi contains no description of a process for gasifying soot.

Regarding claims 7, 16, 25, and 34, the Office Action asserts that Van teaches a non-carbonaceous material with a catalytic functionality to facilitate the gasification of the soot. Applicant takes issue with this assertion. The Abstract of Van states that the disclosed catalyst gasifies can suppress the production of soot but nowhere discusses the gasification of soot by the catalyst.

Regarding claims 8, 17, 26, and 35, the Office Action asserts that, while Wada does not teach reactor temperatures in a range between 2100 F and 2800 F, it does teach a reactor temperature up to 2100 F and that is enough to constitute a *prima facie* case of obviousness. Applicant disagrees. The process for producing syngas described in Wada is an endothermic catalytic reforming process which takes place under milder conditions (i.e., lower temperatures) than an exothermic partial oxidation process without catalyst. As explained in the specification, the temperature range of 2100 F to 2800 F is preferred for optimally gasifying soot and thus does not have the same properties as the temperature range disclosed in Wada.

For the reasons stated above, Applicant does not believe that any of the pending claims are rendered obvious by the cited references. Withdrawal of the rejections is respectfully requested.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (847) 432-7302 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

NISTAC (ASSIGNEE OF RECORD)

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being filed using the USPTO's electronic filing system EFS-Web, and is addressed to: Mail Stop Amendment, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 19th day of June 2007.

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